

Objectives, Principles, and Criteria for Energy Efficiency Portfolios

Jeff Schlegel, Southwest Energy Efficiency Project (SWEET)

December 5, 2003

There are multiple objectives and principles for energy efficiency portfolios and programs, there are tensions between some of them, and therefore they must be balanced within the portfolio. Some objectives and principles are:

- Maximize energy savings (MWh).
- Maximize peak demand savings (MW).
- Maximize economic benefits (\$, present value).
- Maximize customer benefits (energy and non-energy benefits, in \$).
- Maximize cost-effectiveness (net benefits, benefit/cost ratios).
- Capture all cost-effective opportunities (depth of savings).
- Minimize potential lost opportunities (maximize market share).
- Reduce or overcome market barriers, and promote market transformation.
- Provide opportunities for a large number and broad mix of customers to benefit from the energy efficiency programs – all customer classes should have opportunities to participate in and benefit from the programs.
- Increase effectiveness by working with product and service markets, and by taking advantage of market opportunities (market-driven approaches).
- Encourage comprehensive and whole building approaches to capture all cost-effective energy efficiency.
- Increase market influence and leverage by participating in regional and national initiatives.

The following can be used as criteria and indicators of “best” performance:

Objective/Principle	Indicator
Energy savings	MWh (annual and lifetime)
Demand savings	MW (annual and lifetime)
Economic benefits	Value of benefits (\$) Present value of benefits
Customer benefits	Energy and non-energy benefits (\$)
Cost-effectiveness	Net benefits (benefits minus costs) Net present value Benefit/cost ratio (benefits/costs) Cost rate or cost of conserved energy (\$/lifetime kWh saved)
Capture all opportunities (depth of savings)	Program or project: % savings Portfolio/sector: savings as % of retail sales
Minimize lost opportunities	Market share
Reduce or overcome market barriers	Market changes, market effects
Market transformation	Lasting market changes (transformation)
Opportunities for all customers	Broad range of programs Parity – contributions vs. expenditures

Examples of Energy Efficiency Goals

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1. Capture all cost-effective energy efficiency.

By definition, all cost-effective energy efficiency should be captured, as the least-cost resource, before making investments in higher cost resources.

Example: Integrated Resource Planning (IRP), Least-Cost Planning

2. Save X% of energy by Y date, relative to a forecast or scenario.

Example: SWEEP's proposed energy savings goal for Arizona.

Reduce energy use 7% by 2010 and 17% by 2020 (about 1% per year).

3. Save X% of energy by Y date, relative to a base year.

Example: energy savings goal for state facilities and universities (HB 2324).

Reduce energy use 10% per square foot of floor area by 2008 and 15% by 2011, compared to the baseline fiscal year of 2001/2002.

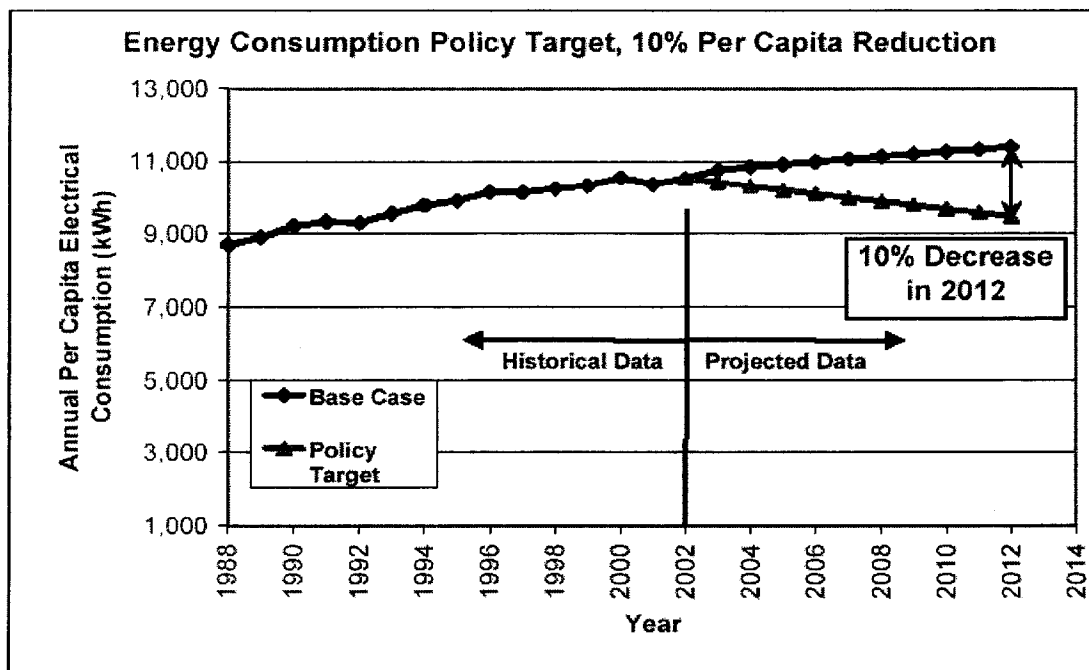
4. Save a specified quantity of energy or peak demand, or a % of load growth.

Examples: many states (savings goals in MWh and MW); Texas (% of load growth).

5. Reduce per capita energy consumption.

Example: Ft. Collins, Colorado

Reduce per capita electric consumption 10%, from the baseline of 2002, by the year 2012. The 10% per capita consumption reduction target will reduce overall electric consumption approximately 17% by 2012 (see graph). Reduce per capita peak day electric demand 15%, from the baseline of 2002, by the year 2012.





Southwest Energy Efficiency Project

Saving Money and Reducing Pollution through Energy Conservation

Energy Efficiency Programs for Arizona DSM

December 5, 2003

Below is a list of high-priority, effective, and cost-effective energy efficiency programs the utilities should offer to their customers.

The programs are organized by consumer markets and distribution channels, to leverage existing activities and opportunities in markets. The mix (portfolio) of programs ensures that all customers have an opportunity to participate in and benefit directly from at least one energy efficiency program.

Residential

Low/Moderate/Fixed Income

Targeted primarily to low/moderate income and fixed income households. Install lighting, appliances (refrigerators), and cooling measures to reduce electricity use. Support for low income weatherization programs.

Residential New Construction

Promotion of Energy Star homes, builder and contractor training, energy efficient HVAC systems approach (not just equipment), and targeted financial incentives. Include an effective building performance/systems approach to cooling in new homes, and promotion of lighting and appliances. Reduce summer utility peak demand by 2.0 to 2.5 kW per home.

Consumer Products

Strong link to and support for Energy Star products. Promotion and targeted financial incentives for lighting, appliances, and other consumer products (windows).

Residential Cooling/HVAC

Central system replacements (air conditioners and heat pumps), delivered by HVAC contractors and dealers. Phase this in after the Residential New Construction cooling system element (systems approach) and HVAC contractor training are implemented.

Commercial, Industrial, & Other Non-Residential

Non-Residential New Construction, Renovation, and Equipment Replacement

Design assistance for customers and the design community. Prescriptive and custom paths for energy-efficiency measures, including lighting, HVAC, motors/drives, and processes/systems. Financial incentives to encourage and leverage customer investment.

Non-Residential Existing Buildings Retrofit

Generally for large/medium existing customers, including lighting, HVAC, motors/drives, industrial processes, compressed air, and pumping systems. Prescriptive and custom paths for energy-efficiency measures. Include retro-commissioning. Financial incentives to encourage and leverage customer investment.

Note: custom approaches that consider unique site situations are most effective in industrial facilities.

Small Business

Provide technical assistance. Use a combination of a financial incentive and pay-as-you-go, on-the-bill financing (with financing capital from utility capital) to promote lighting, HVAC, and refrigeration measures.

Schools and Local Government

Provide technical assistance and building operator training. Use a combination of a financial incentive and pay-as-you-go, on-the-bill financing (with financing capital from the utility).

Potential DSM Programs
Arizona Department of Commerce Energy office

Weatherization Assistance Program (WAP): Support of WAP statewide. WAP reduces energy costs for low-income households by increasing the energy efficiency of their homes, while ensuring their health and safety. Typical measures may include: installing insulation; sealing ducts; tuning and repairing heating and cooling systems; mitigating air infiltration; and reducing electric base load consumption.

Support should also include funding of health and safety, training and technical assistance and monitoring of program.

Implementation of statewide WAP DSM also needs to look at administrative issues, including consistency of policies and procedures across all programs, simplification of reporting and payment processes and evaluation.

Residential New Construction: Support of efforts to incorporate building science (systems approach) techniques throughout the building process. Major focus should include proper design, advanced detailing, correct installation of ductwork, insulation, and ventilation systems. The key components to this effort are education of all building trades, field technical assistance for trades and monitoring/verification that principles are being applied in the field. Without performance inspection, don't expect performance.

Support efforts to implement energy codes and related programs on the local and state level. Assist state businesses to receive potential federal tax incentives targeted at residential construction.

Residential Retrofit: Support the transfer of building science (systems approach) techniques into the mainstream of the home improvement industry. Because of the fragmented nature of the home improvement industry, the most significant opportunity to increase residential energy performance is routinely overlooked. Every day homeowners make uninformed, shortsighted decisions to retrofit individual components of their home without realizing the multiple benefits available by selecting improvements based on a broader whole building systems-engineered approach. This effort should focus on training, technical assistance and monitoring/verification that assists with the introduction of sound building science principles into the home improvement industry. This could include the establishment of required certification (performance contractor) for trade members to perform DSM work.

Municipal Governments: Provide training and technical assistance to municipal governments. Support performance contracting.

It is important to implement a program specifically for smaller communities. Experience from the Energy Office's Energy Municipal Energy Management Program has revealed many opportunities in small communities. These smaller communities have a problem realizing these opportunities because they lack knowledge (staff with an engineering background) and funding. Performance contracting can be an option but most of the projects in these communities may not be of sufficient size to attract performance contractors. DSM funds should be made available to provide these tools, resources and services to smaller communities.

These issues related to knowledge and funding (lack of funding and size of project) are consistent through all of the smaller members of a utility's customer base.

Schools: Provide training and technical assistance. Operation and maintenance training is key. Support performance contracting. Issues of size of projects to attract performance contractors for smaller districts also issue.

Commercial New Construction: Support training and technical assistance to trades. Support efforts in the areas of design assistance and green building. Support efforts to implement energy codes and related programs on the local, state and national level. Provide incentives for beyond code (LEEDS).

Commercial Retrofits: Support training and technical assistance to trades. Support efforts in the areas of design assistance and green building. Support performance contracting. Need to address project size issue in relation to performance contracting.

Industry: Support existing efforts to provide training and technical assistance. These can include DEO Industries of the Future and the Industry Assessment Center (IAC) at Arizona State University. Utilize performance contracting. Issue of size of projects to attract performance contractors for smaller entities also issue for industrial sector.

Consumer Products: Support (promotion and incentives) EPA Energy Star products.

Tucson Electric Power Three Best Opportunities in Each Customer Class

1. Industrial

- a. One-on-one energy management services [existing program]
- b. Firm interruptible (demand)
- c. Education and Training

2. Commercial

- a. Small Commercial – leased facility
 - i. Education and Training
 - ii. On-line Energy Audit (energy management)
- b. Small Commercial – own facility
 - i. Facilities Upgrade Program (ex. Duct sealing)
 - ii. On-line Energy Audit (new and existing facilities)
- c. Schools
 - i. Duct Sealing Program
 - ii. Energy Management Services
- d. Education and Training

3. Residential

- a. Guarantee Home Program (new construction)
- b. On-line Energy Audit (new and existing homes)
- c. Duct Sealing Program (existing homes)
- d. Low E Window Film Program (existing home)
- e. Weatherization Program (increase funding)
- f. Education and Training

UNS Electric Three Best Opportunities in Each Customer Class

1. Industrial

- a. One-on-one energy management services [existing program]
- b. Firm interruptible (demand) [*Note: UNS currently has two demand customers, which have reset their demand ratchets through automated load monitoring systems.*]
- c. Education and Training

2. Commercial

- a. Small Commercial – leased facility
 - i. Education and Training
 - ii. Energy Audit (energy management)
- b. Small Commercial – own facility
 - i. Facilities Upgrade Program (ex. Duct sealing)
 - ii. On-line Energy Audit (new and existing facilities)
- c. Schools
 - i. Duct Sealing Program
 - ii. Energy Management Services
- d. Education and Training

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- a. Guarantee Home Program (new construction)
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DEMAND SIDE MANAGEMENT PROGRAM RECOMMENDATIONS

Presented at
The Arizona Corporation Commission
Demand Side Management Workshop

January 15, 2004

By
Southwest Gas Corporation
Research/Conservation & Demand Side Management Department

OVERVIEW

At the Arizona Corporation Commission (ACC) Demand Side Management (DSM) Workshop held on October 30, 2003, the ACC requested that the utilities provide recommendations for the three best DSM opportunities in each of three customer classes: Residential, Commercial, and Industrial. Southwest Gas Corporation (Southwest) respectfully submits its recommendations below.

Southwest notes that the following programs are only recommendations. Further analysis needs to be conducted, in order to determine program cost-effectiveness and to develop implementation plans. In addition, Southwest's currently approved DSM budget is \$1.25 million annually. With that amount, Southwest conducts two programs: 1) Low-Income Energy Conservation (\$350,000), and 2) Energy Advantage Plus (\$900,000), which is conducted only in the Tucson area. Southwest would be unable to offer all of the programs listed below without a significant increase in customer rates. Therefore, Southwest believes the next step is to prioritize the recommended programs, determine their cost effectiveness, and select the appropriate program(s) for implementation.

RESIDENTIAL

Low-Income Energy Conservation

This program is aimed at low-income customers who require weatherization for their homes and/or rate assistance for their utility bills.

This program is currently conducted by Southwest Gas, in conjunction with the Arizona Energy Office, community-based organizations, and other Arizona utilities. The program includes both home weatherization and consumer education, in order to reduce energy usage in income-qualified residences.

Multi-Family New Construction

The purpose of this DSM program is to provide energy-efficient housing for renters—a group which is often overlooked for DSM programs, but which has a great need for cost savings on their utility bills.

The program would call for building standards that exceed existing building codes, similar to Southwest's Energy Advantage Plus program. Both the building envelope and the appliances would be upgraded. The program would also include an educational component, to increase awareness of energy efficiency among consumers, builders, and architects.

High-Efficiency Appliances in Retail Stores

This program is aimed at consumers who purchase either new or replacement equipment at retail stores. The goal is to increase both the awareness and purchase of more efficient home appliances.

The program would feature a partnership between the utility and the retail sectors. It would focus on building consumer awareness by providing educational materials at the point of purchase and on increasing the availability of high-efficiency equipment in the stores.

Single-Family New Construction

The purpose of this DSM program is to provide energy-efficient housing for homeowners and to continue to transform the new construction market to higher efficiency levels.

The program would call for building standards that exceed existing building codes, and would include both the thermal shell and appliances. Southwest has seen much success with this type of program, through its Energy Advantage Plus program in the Tucson area. The program would also include an educational component, to increase awareness of energy efficiency among architects, builders, and homebuyers.

COMMERCIAL

Food Service Equipment

The purpose of this program is to increase the utilization of high-efficiency cooking equipment in the thousands of restaurants and commercial food service facilities throughout Arizona.

The program would be designed to educate food service managers about high-efficiency equipment and to influence their purchase decisions. In addition to providing informational material and technical guides, Southwest would utilize its existing Food Service Center as a training facility to demonstrate the latest, most efficient equipment that is available in the market.

High-Efficiency Laundries

This program is aimed at commercial laundry facilities where large volumes of linens and clothing are washed and dried on a daily basis. The laundering process is both water- and energy-intensive, and represents an area for significant resource savings.

The program would encourage the installation of high-efficiency clothes washers and dryers, in order to conserve both water and energy. Program representatives would meet with laundry owners and facility managers to help them determine the types of equipment that would best meet their performance and efficiency needs.

Efficient Building Design

This program targets architects, engineers, designers, and builders of new commercial construction projects, for the purpose of improving the energy efficiency of commercial buildings.

The program involves providing information and continuing education to the building and design community, in order to encourage more energy-efficient new construction in the commercial sector. Educational materials and workshops would be developed and presented.

INDUSTRIAL

Distributed Generation

This program is intended for a variety of industrial customers, depending on the distributed generation application. Program participants could range from small to large industrial customers. The program's advantages include higher efficiency, reduced emissions, cost savings, peak-shaving, power reliability, and risk management.

The program would encourage the installation of such technologies as cogeneration, fuel cells, and microturbines. An educational component is essential to this program, in order to increase awareness and acceptance for this technology in the industrial community. The program would also call for a partnership between the natural gas/electric utilities and the ACC to facilitate the adoption of this technology.

Irrigation Pumping

The intent of this program is to provide high-efficiency irrigation pumping, primarily for agricultural customers and other engine-driven applications. This program has the added benefit of reducing peak power demand.

The program would encourage the use of high-efficiency, engine-driven irrigation pumping. Because irrigation pumping often occurs during peak load hours, this DSM program has the potential to significantly decrease electric demand.

Technology Information Center

This program is designed to provide technical information to industrial customers, in order to reduce energy usage, lower utility bills, answer questions about energy-efficient technologies, and increase awareness of environmental issues.

The program would provide information through various formats, including an Internet resource website, an "Ask an Expert" hotline, newsletters, and an electronic research library. Customer interest in various topics would be tracked, for use in tailoring future DSM programs to meet the needs of industrial customers.

DEMAND SIDE MANAGEMENT PROGRAM RECOMMENDATIONS
Southwest Gas Corporation
January 15, 2004

RESIDENTIAL		COMMERCIAL		INDUSTRIAL	
Low-Income Energy Conservation		Food Service Equipment		Distributed Generation	
Multi-Family New Construction		High-Efficiency Laundries		Irrigation Pumping Technology	
High-Efficiency Appliances in Retail Stores		Efficient Building Design		Information Center	
Single-Family New Construction					

SOUTHWEST GAS CORPORATION
ARIZONA
RESIDENTIAL ENERGY EFFICIENCY ESTIMATES ¹

Description	1999	2000	2001	2002	12 Mo. Ending Nov 2003	2004 Budget
UTILITY SYSTEM DATA						
Residential Sales (Therms) ²	253,724,262	262,980,615	278,142,839	266,400,809	252,451,034	301,136,242
Annual Growth Rate: Energy (%)		3.6%	5.8%	-4.2%	-5.2%	19.3%
Revenues (\$)	\$249,134,653	\$261,462,633	\$271,639,489	\$260,851,706	\$247,183,763	\$294,892,720
ENERGY EFFICIENCY DATA						
Energy Efficiency Expenditures (\$)	\$950,235	\$1,119,142	\$1,247,829	\$1,250,000	\$1,165,352	\$1,250,000
Expenditures as % of Residential Revenues	0.4%	0.4%	0.5%	0.5%	0.5%	0.4%
Annual Energy Savings ³						
Natural Gas (Therms)	282,733	311,697	389,981	444,296	184,954	190,330
Electric (kWh) - Site ⁴	4,664,802	5,981,918	8,191,776	10,553,732	4,229,772	4,301,424
Electric (kWh) - Source ⁵	13,994,405	17,945,755	24,575,329	31,661,196	12,689,316	12,904,272
Electric (kW)	5,415	6,997	9,556	12,368	4,954	5,038
Water (gallons) ⁶	6,997,203	8,972,877	12,287,665	15,830,598	6,344,658	6,452,136
Annual Therm Savings as % of Residential Sales	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%
Cumulative Annual Effect						
Natural Gas (Therms)	282,733	594,430	984,411	1,428,707	1,613,661	1,803,991
Electric (kWh) - Site ⁴	4,664,802	10,646,720	18,838,497	29,392,228	33,622,000	37,923,424
Electric (kWh) - Source ⁵	13,994,405	31,940,160	56,515,490	88,176,685	100,866,001	113,770,273
Electric (kW)	5,415	12,413	21,969	34,337	39,291	44,329
Water (gallons)	6,997,203	15,970,080	28,257,745	44,088,343	50,433,001	56,885,137
Cumulative Therm Savings as % of Residential Sales	0.1%	0.2%	0.4%	0.5%	0.6%	0.6%
Lifetime Energy Savings (10 yr)						
Natural Gas (Therms)	2,827,330	5,944,300	9,844,113	14,287,073	16,136,613	18,039,913
Electric (kWh) - Site ⁴	46,648,018	106,467,201	188,384,966	293,922,285	336,220,005	379,234,245
Electric (kWh) - Source ⁵	139,944,054	319,401,604	565,154,898	881,766,854	1,008,660,014	1,137,702,734
Electric (kW)	54,154	124,127	219,687	343,365	392,905	443,285
Water (gallons)	69,972,027	159,700,802	282,577,449	440,883,427	504,330,007	568,851,367

Assumptions:

¹ DSM programs conducted by SWG are targeted at the residential sector and paid for through a surcharge on the residential rate schedules (G-5, G-10, G-15, G-16 and G-20). Therefore all data shown above is only residential.

² Residential sales (therms) are actuals and were not weather normalized.

³ A variety of resources were used to estimate energy savings. Savings (therms, kWh, and kW) for the Seniors Helping Seniors (SHS) program and the Energy Advantage Plus program were based on the energy savings used in the Total Resource Cost analysis for program approval by the Arizona Corporation Commission. The therm savings on the Low Income Energy Conservation program were based upon estimates from the Oak Ridge National Lab, while the electric savings were conservatively based on average savings per household in the SHS program.

⁴ Estimated electric savings at the site.

⁵ Estimated electric savings from the source. A commonly used multiplier of 3.0 was used to account for the "heat rate" of production at the central power plant, and the losses in transmission and distribution.

⁶ The SWEEP reports states the typical new coal-fired power plant consumes about 0.67 gallons of water per kWh and the gas-fired about 0.33 gallons per kWh. An average of 0.50 gallons per kWh was used in estimating water savings.

Utility Energy Efficiency Results Compared to SWEEP's Proposed Savings Goals

Date: January 15, 2004

Utility: TUCSON ELECTRIC POWER

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
UTILITY SYSTEM DATA														
Retail Energy Sales (MWh)	6,381,087	6,547,495	6,923,198	6,942,287	7,296,811	7,470,414	7,830,485	7,789,068	8,186,014	8,260,882	8,012,418	8,217,659	8,289,404	8,532,688
Annual Growth Rate: Energy (%)		2.6%	5.7%	0.3%	5.1%	2.4%	2.1%	2.1%	5.1%	0.9%	-3.0%	2.6%	0.9%	2.9%
Peak Demand (MW)	1,356	1,319	1,399	1,449	1,585	1,617	1,619	1,659	1,786	1,746	1,862	2,060	2,083	2,122
Annual Growth Rate: Peak Demand (%)		-2.7%	6.1%	3.6%	9.4%	2.0%	0.1%	2.5%	7.7%	-2.2%	6.6%	10.6%	1.1%	1.9%
Retail Sales Revenue (\$ millions)	549.5	561.1	569.8	572.8	608.9	621.7	622.7	629.9	664.6	670.1	666.0	687.2	695.8	717.7
ENERGY EFFICIENCY DATA														
Energy Efficiency Expenditures (\$,000)		\$2,840	\$3,257	\$3,362	\$2,645	\$1,786	\$1,605	\$2,900	\$1,583	\$1,462	\$1,500	\$1,300	\$1,050	\$1,050
Expenditures as % of Retail Revenues	0.00%	0.51%	0.57%	0.59%	0.43%	0.29%	0.26%	0.46%	0.24%	0.22%	0.23%	0.19%	0.15%	0.15%
Annual Energy Savings (MWh)		23,354	17,534	20,754	10,326	3,442	1,825	2,193	201	0	0	0	0	0
Annual Savings as % of Retail Sales	0.00%	0.36%	0.25%	0.30%	0.14%	0.05%	0.02%	0.03%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cumulative Annual Effect (MWh)	0	23,354	40,888	61,642	71,968	75,410	77,235	79,428	79,629	79,629	79,629	79,629	79,629	79,629
Cumulative Annual Effect (% of Sales)	0.00%	0.36%	0.59%	0.89%	0.99%	1.01%	1.01%	1.02%	0.97%	0.96%	0.99%	0.97%	0.96%	0.93%
Lifetime Energy Savings (MWh)														
Annual Peak Demand Savings (MW)		6	6	6	5	2	1	1	1	1	2	4	6	8
Annual Savings as % of Peak Demand	0.00%	0.46%	0.41%	0.42%	0.33%	0.09%	0.06%	0.06%	0.06%	0.06%	0.11%	0.19%	0.28%	0.38%
Cumulative Annual Effect (MW)	0	6	12	18	23	25	26	27	28	29	31	35	41	49
Cumulative Annual Effect (% of Peak)	0.00%	0.46%	0.84%	1.23%	1.46%	1.52%	1.58%	1.61%	1.55%	1.64%	1.64%	1.68%	1.95%	2.29%
COST EFFECTIVENESS														
Spending per kW peak savings (\$/kW)		\$468.65	\$572.41	\$552.96	\$498.06	\$1,190.67	\$1,605.00	\$2,900.00	\$1,583.00	\$1,462.00	\$757.58	\$325.00	\$177.25	\$129.36
Spending per kWh energy savings (\$/kWh)		\$0.122	\$0.186	\$0.162	\$0.256	\$0.519	\$0.879	\$1.322	\$7.876					

TEP Notes:

Energy Efficiency Expenditures represent direct implementation costs only, and does not include net lost revenue.

TEP estimates that traditional DSM program administration required at least 15 FTE. Current MT program requires 1 FTE.

TEP does not estimate or claim energy savings for educational/training or for low-income weatherization.

Annual Savings = Incremental annual (annualized) savings due to program in given year

Cumulative Annual Effect = Cumulative sum of annual savings over multiple years (sum should be adjusted by measure life for measures with short lives, where appropriate)

Lifetime Savings = Savings over the life of the measures due to program in a given year (annual savings X weighted average measure life)

Utility Energy Efficiency Results Compared to SWEEP's Proposed Savings Goals

Date: January 15, 2004

Utility: UNS ELECTRIC

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
UTILITY SYSTEM DATA														
Retail Energy Sales (MWh)				951,023	1,031,816	1,049,194	1,081,558	1,120,469	1,209,102	1,282,101	1,287,362	1,279,369	1,320,080	1,358,646
Annual Growth Rate: Energy (%)				#DIV/0!	8.5%	1.7%	3.1%	3.6%	7.9%	6.0%	0.4%	-0.6%	3.2%	2.9%
Peak Demand (MW)					208	213	232	223	246	262	267	267	276	285
Annual Growth Rate: Peak Demand (%)				#DIV/0!	#DIV/0!	2.8%	8.5%	-3.6%	10.3%	6.3%	1.8%	0.2%	3.4%	3.1%
Retail Sales Revenue (\$, millions)														
ENERGY EFFICIENCY DATA														
Energy Efficiency Expenditures (\$, 000)				\$1,062	\$580	\$142	\$135	\$25	\$185	\$216	\$159	\$159	\$159	\$159
Expenditures as % of Retail Revenues														
Annual Energy Savings (MWh)				2,346	5,871	2,404	3,585	283	2,136	54	3,991	3,991	3,991	3,991
Annual Savings as % of Retail Sales				0.25%	0.57%	0.23%	0.33%	0.03%	0.18%	0.00%	0.31%	0.31%	0.30%	0.29%
Cumulative Annual Effect (MWh)				2,346	8,217	10,622	14,206	14,489	16,625	16,679	20,670	24,661	28,652	32,643
Cumulative Annual Effect (% of Sales)				0.25%	0.80%	1.01%	1.31%	1.29%	1.37%	1.30%	1.61%	1.93%	2.17%	2.40%
Lifetime Energy Savings (MWh)														
Annual Peak Demand Savings (MW)				0	2	1	1	0	1	0	2	2	2	2
Annual Savings as % of Peak Demand				#DIV/0!	0.97%	0.51%	0.36%	0.09%	0.27%	0.02%	0.86%	0.75%	0.72%	0.70%
Cumulative Annual Effect (MW)				0	2	4	4	5	5	5	8	10	12	14
Cumulative Annual Effect (% of Peak)				#DIV/0!	1.19%	1.66%	1.90%	2.06%	2.14%	2.03%	2.85%	3.60%	4.21%	4.78%
COST EFFECTIVENESS														
Spending per kW peak savings (\$/kW)				\$2,360.00	\$288.56	\$130.28	\$160.71	\$119.62	\$280.30	\$3,600.00	\$69.46	\$79.50	\$79.50	\$79.50
Spending per kWh energy savings (\$/kWh)				\$0.453	\$0.099	\$0.059	\$0.038	\$0.088	\$0.087	4.000	0.040	0.040	0.040	0.040

Annual Savings = Incremental annual (annualized) savings due to program in given year

Cumulative Annual Effect = Cumulative sum of annual savings over multiple years (sum should be adjusted by measure life for measures with short lives, where appropriate)

Lifetime Savings = Savings over the life of the measures due to program in a given year (annual savings X weighted average measure life)